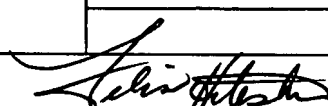


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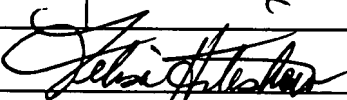
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| Form PTO-1449<br>(REV. 1/06)  |             | US Dept. of Commerce<br>PATENT & TRADEMARK OFFICE   |            | ATTY DOCKET NO.<br>126790       |                             | APPLICATION NO.<br>National Stage Patent<br>Application of<br>PCT/JP2004/007619 |  |
| INFORMATION DISCLOSURE STATEMENT<br><br>(Use several sheets if necessary)   |             |   |            | APPLICANT<br>Makoto IIDA        |                             |   |  |
|   |             |   |            | FILING DATE<br>January 24, 2006 |                             |   |  |
| U.S. PATENT DOCUMENTS   |             |   |            |                                 |                             |   |  |
| Examiner<br>Initials  | Cite<br>No. | Document Number   | Date       | Name                            |                             |   |  |
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| FH.   | 1           | WO 02/00970 A1  | 01/03/2002 | WIPO                            | X                           | —   |  |
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| FH.   | 4           | V.V. VORONKOV, "The Mechanism of Swirl Defects Formation in Silicon," <i>Journal of Crystal Growth</i> , 59 (1982), pp. 625-643 |            |                                 |                             |   |  |
|   |             |   |            |                                 |                             |   |  |
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| INFORMATION DISCLOSURE STATEMENT<br><br>(Use several sheets if necessary)   |             |   |            | APPLICANT<br>Makoto IIDA        |                             |   |  |
|   |             |   |            | FILING DATE<br>January 24, 2006 |                             |   |  |
| U.S. PATENT DOCUMENTS   |             |   |            |                                 |                             |   |  |
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| F.H.  | 1           | WO 02/00970 A1  | 01/03/2002 | WIPO                            | X                           | —   |  |
| F.H.  | 2           | JP 2002-137987 A  | 05/14/2002 | JAPAN                           | X                           | X   |  |
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\*B Reference

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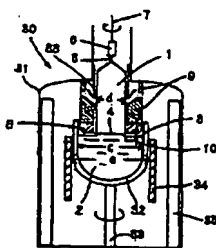
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— 国際調査報告書
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各PCTガゼットの巻頭に掲載されている「コードと略語  
のガイダンスノート」を参照。

(54) Title: METHOD FOR PRODUCING SILICON SINGLE CRYSTAL

(54) 発明の名称: シリコン単結晶の製造方法



(57) Abstract: A method for producing a silicon single crystal by the CZ method, characterized in that an inner diameter (c) of a crucible (32) having a silicon raw material therein is 2 to 2.5 times an intended diameter (d) of the silicon single crystal (1) to be produced, and the silicon single crystal is pulled up in a manner wherein the minimum value of a ratio (V/Gs) in the direction of diameter of a velocity (V) of pulling up to a temperature gradient (Gs) in the interface between solid and liquid in the crystal is 0.3 mm<sup>2</sup>/K ? min or more. The method allows the decrease of the temperature gradient (G1) in a melt, the increase of the maximum velocity of pulling up, and the suppression of occurrence of an OSF ring, by the use of the ordinary CZ method, with ease and simplicity, and at a low cost.

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